

Connectors & Doctrine Branch

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# **SURFACE CONNECTORS**

# Major Connector Programs & Issues

- LCAC SLEP & Sustainment
- Ship-to-Shore Connector (SSC) Program (LCAC-100)
- LCU Sustainment & Surface Connector (X)-Recapitalization
- Joint High-Speed Vessel (JHSV)
- Other Identified Gaps & Recommendations

# LCAC (SLEP) & Sustainment

The LCAC Service Life Extension Program (SLEP) program began in 2000 and is planned to be completed in FY18. Coupled with the LCAC (post-SLEP) sustainment effort, it extends the service life of the Required Operational Capability/Projected Operational Environment (ROC/POE) 72 craft from 20-30 years and helps minimize the non-displacement craft quantity gap until/while the LCAC-100 class craft produced in the Ship-to-Shore Connector (SSC) program are introduced into the fleet.

**Required Capability:** Fully fund LCAC (SLEP) and LCAC sustainment to minimize pending craft gap. SLEP program is designed to:

- Upgrade engines and refurbish rotating machinery for more power along with fuel and maintenance efficiencies
- Outfit with deep skirt to reduce maintenance and increase performance
- Replace C4N equipment to provide open architecture, precision navigation, and enhance interoperability

**Impact:** The depth of the pending non-displacement craft gap will cause a severe degradation in ability to conduct amphibious operations. Failure to fully fund SLEP and sustainment will exacerbate LCAC gap as LCAC-100s enter service in fewer numbers than craft retired. LCAC (SLEP) and sustainment were included within #2 on the 2013 Amphibious Warfare Integrated Prioritized Capability List (AMW IPCL).

**Current Status:** 72 (ROC/POE qty) to undergo SLEP from the original 91 produced. 8 craft have been authorized for removal from the inventory (4 each ACU) IAW FY14 budget; serviceable parts will be recovered prior to disposal. Funded SLEP plan: 4 FY14; 2 FY15; FY16 -18, 4 each year.

**Potential:** Fully fund and additional displacement life extension (LCAC/LCAC8 SLEP effort/LCAC to SLEP) potentially add 5 more years of service life to select SLEP craft to further minimize gap.

# Ship-to-Shore Connector (SSC) Program (LCAC-100)

The SSC program of record will produce the LCAC-100 class craft to replace the current fleet of legacy LCAC and LCAC (SLEP) with an Initial Operational Capability (IOC) in 2020 and full Operational Capability (FOC) circa 2029. The LCAC-100 will provide more powerful engines, increased reliability, advanced navigation and engineering control systems, and more payload to maneuver troops and equipment from ships to over-the-shore within the littorals.

**REQUIRED CAPABILITY:** A ship to over-the-shore non-displacement landing craft with increased payload and reliability beyond the legacy LCAC and LCAC (SLEP) in order to support MAGTF maneuver in the littorals. The LCAC-100's capabilities include:

- 74 ton payload capacity to carry an M1A1 tank with track width mine plow
- Operational environment of a significant wave height of 4.1 ft. with an ambient temp of 100 degrees F.
- Main cargo (level) deck ~ 50 feet x 24 feet wide, strengthened to accommodate heavier footprints

(mobile loaded MTRVs) outboard of center-line

- Increased automation/human-system interfaces to allow for a two-person pilot/copilot cockpit configuration.

**IMPACT:** Full funding is critical to minimize the gap in the Required Operational Capability/Projected Operational Environment (ROC/POE) quantity of 72 craft needed for surface ship-to-over-the-shore and over-the-horizon littoral maneuver as legacy LCAC and LCAC (SLEP) craft are retired and, or craft approach planned extended service life.

**CURRENT STATUS:** SSC was included in #2 on the 2013 Amphibious Warfare Integrated Prioritized Capability List (AMW IPCL). The economic minimum production quantity in the acquisition strategy (AS) is 5; AS/program build plan identifies an option to increase production to 8 or more per year. Construction of the test and training craft (LCAC-100) planned to begin late FY14; IOC 6 craft in FY20; FOC 72 craft ~ FY29 per current build plan. Operational Assessment conducted 15-17 Jul. 2d Tanks/NAVSEA checking clearance of TWMP in relation to ramp design break-over angles ahead of detailed design approval and Milestone C.

## **Recommendations**

- Fully fund non-displacement landing craft via the SSC Pgm).

# LCU Sustainment & Surface Connector (X)-Recapitalization

The LCU 1610 class provides the heavy payload capacity and independent operations capability necessary to ensure surface movement and crisis response requirements can be met across the ROMO. These craft were built for a service life of 25 years; however, the fleet age averages 40 years. Maintenance and equipment obsolescence are increasing the challenges associated with the LCU sustainment program while the class continues to experience a high demand signal.

**REQUIRED CAPABILITY:** A heavy lift displacement craft to maintain the necessary balanced landing craft fleet required for surface movement and maneuver in the littorals. The planned SC(X) program will recapitalize the LCU 1610 class' capabilities that provide:

- Simultaneous transport of personnel and cargo (up to 400 passengers without modification)
- Persistence (10 day / 1,200 nm), forward staging, small boat platform, dive support, surveillance (LCAC

limited to 12 hrs; well deck required)

- For operations in confined or debris-congested waterways or landing zones; surf salvage; TSC, building

partnerships

- A key component of logistics-over-the-shore ops via interface with RRDF / INLS / Army MCS

Critical is a 2 M1A1 tank with TWMP payload capacity and the ability to provide intra-theater / shore-to-shore maneuver of up to 170 short tons of vehicles, equipment, and sustainment. The ROC/POE quantity of 32 is consistent with the demand stemming from its flexibility and value for ARG/MEU and independent amphibious war ship deployments. LCU sustainment & SC (X) were the #2 priority on the 2013 AMW IPCL.

**IMPACT:** Failure to fund the LCU Sustainment and SC (X) programs will lead to a loss of the heavy lift and flexibility needed to fulfill amphibious and expeditionary operational requirements.

**CURRENT STATUS:** Even with the oldest active LCU being more than 50 years old, the ongoing sustainment program is designed to retain the ROC/POE inventory at 32 craft; however, escalating costs makes this a challenge going forward. NAVSEA recently sent out an advisory to the ACUs recommending a max payload capacity of 140 S/T due to hull form weight growth/stability issues. The SC(X) AoA has concluded and the executive steering committee accepted the study recommendation to proceed with development of the LCU Mod-Repeat+ alternative which is pending approval by the NCB.

**Recommendations**

# Joint High-Speed Vessel (JHSV)

The JHSV bridges the gap between low-speed sea lift and high speed airlift by transporting personnel, equipment, and supplies over intra-theater distances with access to littoral offload points including austere, minor and degraded ports.

**REQUIRED CAPABILITY:** The JHSV is a non-combatant, and is designed to operate in permissive environments. Key capabilities:

- Transport 600 short tons of cargo, combat-loaded vehicles, and supplies for 1200 nm at 35 knots
- Off-load pier side in austere environments without reliance on shore infrastructure or to a roll-off/roll-on discharge facility (RRDF) in sea state (SS)1.
- 20,000 ft<sup>2</sup> mission bay/cargo space to support a combat-loaded M1A2 tank.
- 312 airline seats and 104 permanent berths for embarked troops
- Launch/recover small boats (11 meter RHIBs) with its organic 20-ton crane.
- Flight deck accommodates H-60, H-1, and H-53 aircraft operations. It can also accommodate vertical replenishment (VERTREP) - including with the MV-22.

**IMPACT:** The JHSV enables rapid closure of forces to the sea base from advanced and intermediate bases; maneuver of combat ready forces in appropriate threat environments to in-theater austere or degraded ports; and at-sea logistics movement from afloat prepositioning force (APF) and maritime prepositioning ships (MPS). JHSV can be used to support theater security cooperation, HA/DR, non-combatant evacuation, and other missions.

**CURRENT STATUS:** JHSV-1 SPEARHEAD continues its first deployment in SOUTCOM. JHSV-2 CHOCTAW CTY and JHSV-3 MILLINOCKET have delivered. JHSV-2 is scheduled to participate in BA-14. JHSV-3 conducted IOT&E interface with MLP-1 this month. JHSV-4 FALL RIVER is pending delivery. JHSV 5 & 6 are under construction with deliveries scheduled one every 6 months. The Office of Naval Research (ONR) Interface Ramp Technology (IRT) project designed to enable at-sea interface in a 1 to 4 feet significant wave height (SWH)/SS 3 completed static testing in Dec (M1A1); motion testing 01 May. The IRT program is closing out; ramp to be prepped for storage. Prototype IRT will no longer be back-fitted on JHSV. NAVSEA/N4 plan is determine SS capability (>1) of current ramp. Is examining new designs more conducive to current hull design that consider AAV/ACV launch capability

# Other Identified Gaps/Recommendations

- **Improved Navy Lighterage System (INLS)**
  - MFP suggested potential concept of using INLS to move bulk fuel and water.
  - MFP definition of requirement necessary
- **T-AKE Organic Surface Connector**
  - Navy/NAVFAC recapitalized MPF surface cargo / vehicle movement capability with INLS and PAX / small cargo loads with MPF Utility Boat
  - OPNAV/NAVFAC has disinvested (no funding for) MK-8 . Crewing, operations, and maintenance funding source is O&M from the respective NBG.
  - SID in receipt of MFP UNS. SID (ESC Br) is pursuing options for organic surface connector capability aboard T-AKE. A T-AKE engineering design study is pending to assess organic LO/LO capacity to support organic surface connector.
    - Further coordinated DOTMLPF analysis with MFP will be necessary to articulate surface movement capabilities needed in a T-AKE connector.
- **AAV/ACV Splash**
  - NSWC-PCD started work to examine LCAC aft ramp design for potential improvements to enhance AAV splash capability.
- **Lighter, Amphibious Resupply Cargo (LARC) recapitalization. Initial Capability Document (ICD) in**

# Other Identified Gaps/Recommendations (Cont.)

- **Ultra-Heavy Lift Amphibious Connector (UHAC)**
  - **Potential option to enhance ship-to-shore movement capacity**
  - **Funding support for full-scale demonstrator remains a challenge**